4.7 AIR QUALITY

This section discusses the geographic, topographic, and meteorological patterns in the Project area that may affect air quality. The environmental impacts of construction and operation are analyzed, and mitigation is recommended.

4.7.1 Environmental Setting

The pipeline route passes through Kern, San Bernardino, and Riverside Counties in California. The Project is located in the Mojave Desert Air Basin (MDAB) and is regulated by both the Mojave Desert Air Quality Management District (MDAQMD) and the Kern County Air Pollution Control District (KCAPCD).

Several geographic and climatic patterns in the region affect air quality in the Project area. The climate of the Project area is characteristic of a desert environment. The large San Gabriel and San Bernadino Mountain Ranges block the desert from the cool, moist coastal air of the South Coast Air Basin (SCAB). The Mojave Desert region generally experiences hot, dry summers and mild winters, with very little annual rainfall (from 2 to 6 inches per year). A moderately intense anticyclonic circulation strongly influences the weather patterns in this region, except during winter storms. On average, 20 to 30 frontal systems move into the MDAB each winter. Prevailing winds are out of the west and south.

The closest weather stations to the Project are located at Blythe, Barstow, and Mojave. Meteorological data from these stations indicate that the annual average temperatures at these stations are 71.9 ^{o}F, 63.9 ^{o}F, and 62.6 ^{o}F for Blythe, Barstow, and Mojave, respectively. The majority of rainfall occurs during winter months, with an average annual rainfall of about 3.83 inches in Blythe, 4.40 inches in Barstow, and 5.83 inches in Mojave.

4.7.2 Regulatory Setting

The following describes the Federal, State, and local regulations and rules concerning air quality that pertains to the Project.

Federal

The Clean Air Act and Ambient Air Quality

The Federal Clean Air Act (CAA) amendments of 1970 empowered the EPA to develop National Ambient Air Quality Standards (NAAQS) for six common air pollutants. These criteria pollutants include nitrogen dioxide (NO_2), carbon monoxide (CO), particulate matter smaller than 10 microns in diameter (PM_{10}), ozone (O_3), sulfur dioxide (SO_2), and lead (Pb). These standards include primary standards designed to protect public health and secondary standards designed to protect public welfare, predominately visibility.

NAAQS are based on an allowable concentration of a pollutant and an averaging time over which the concentration is measured. Allowable concentrations are based on studies of the effects of pollutants on human health, crops, and vegetation and damage to building materials. The averaging times are based on whether damage is more likely to occur during a short time, 1 hour, or a longer period, 8 or 24 hours, or 1 month. Standards for some pollutants reflect both short- and long-term effects, and have been developed for specific durations of exposure over specific averaging times. The primary NAAQS, as well as the relevant health effects associated with each pollutant, are shown in Table 4.7-1.

Table 4.7-1. California and Federal Ambient Air Quality Standards

Air Pollutant	State Standard	Federal Primary Standard	Most Relevant Effects
	Concentration/ Averaging Time	Concentration/ Averaging Time	
Ozone (O_3)	0.09 ppm, 1-hr. avg. (180 µg/m3)*	0.12 ppm, 1-hr avg.,(235 µg/m3) 0.08 ppm, 8-hr avg.** (157 µg/m3)	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals; (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
Carbon monoxide (CO)	9.0 ppm, 8-hr avg. (10 mg/m3) 20 ppm, 1-hr avg. (23 mg/m3)	9 ppm, 8-hr avg. (10 mg/m3) 35 ppm, 1-hr avg. (40 mg/m3)	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
Nitrogen dioxide ($N0_2$)	0.25 ppm, 1-hr avg. (470µg/m3)	0.053 ppm, annual arithmetic mean (100 µg/m3)	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration
Sulfur dioxide ($S0_2$)	0.04 ppm, 24-hr avg. (105µg/m3) 0.25 ppm, 1-hr. avg. (655µg/m3)	0.030 ppm, annual arithmetic mean (80 µg/m3) 0.14 ppm, 24-hr avg. (365 µg/m3)	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Suspended particulate matter (PM_{10}) Particulate matter ($PM_{2.5}$)**	30 µg/m3, annual geo-metric mean 50 µg/m3, 24-hr avg. No State standard	50 µg/m^3, annual arithmetic mean 150 µg/m3, 24-hr avg. 15 µg/m^3, annual arithmetic mean 65 µg/m3, 24-hr avg.	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children

Table 4.7-1. California and Federal Ambient Air Quality Standards (cont'd)

Air Pollutant	State Standard	Federal Primary Standard	Most Relevant Effects
	Concentration/ Averaging Time	Concentration/ Averaging Time	
Sulfates	25 µg/m3, 24-hr avg.	No Federal standard	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead	1.5 µg/m3, 30-day avg.	1.5 µg/m3, calendar quarter	(a) Increased body burden; (b) Impairment of blood formation and nerve conduction
Hydrogen sulfide	0.03 ppm (42 µg/m3)	No Federal standard	Severe irritant to eyes and mucous membranes
Visibility-reducing particles	In sufficient amount to reduce the visual range to less than 10 miles at relative humidity less than 70%, 8-hour average (10 am – 6 pm)	No Federal standard	Visibility impairment on days when relative humidity is less than 70 percent

µg/m3 = Microgram per meter cubed.
ppm = Parts per million.
* Parenthetical value is an approximately equivalent concentration.
** The ozone 1-hour standard applies only to areas that were designated nonattainment when the ozone 8-hour standard was proposed in July 1997. This provision allows for a smooth, legal, and practical transition to the 8-hour standard. The ozone 8-hour standard and the $PM_{2.5}$ standards were recently promulgated after extended litigation and are included for information only until the EPA can promulgate designations of attainment and nonattainment.

Source: California Air Resources Board 2002.

In July 1997, following a lengthy scientific review, the EPA announced new NAAQS for ground-level O_3. The new standard was based on 8-hour O_3 readings and would better protect health and the environment than the existing 1-hour standard. The US Supreme Court upheld the EPA's 8-hour O_3 standard in February 2001. In 1997, the EPA also proposed new standards for particulate matter smaller than 2.5 microns in diameter ($PM_{2.5}$), to regulate very fine particles that penetrate deeply into the lungs and cause adverse health effects. The US Supreme Court upheld these new standards in February 2001. The new standards are shown in Table 4.7-1.

Sections 169A and 169B of the CAA contain requirements for states to protect and improve visibility in national parks and wilderness areas in the country. In 1977, Congress designated certain national parks and wilderness areas as "mandatory Class I Federal areas," where visibility was identified as an important value. The Class I designation involves those areas where almost no change from current air quality is allowed from new sources. Federal Class I areas within 100 miles of the Project area are the Sequoia National Park, Kings Canyon National Park, Dome Land Wilderness, San Rafael Wilderness, Cucamonga Wilderness, San Gabriel Wilderness, San Gorgonio Wilderness, Agua Tibia Wilderness, San Jacinto Wilderness, and Joshua Tree National Monument and Wilderness.

State

State Implementation Plans and State Air Quality Standards

The States are required to implement and enforce the NAAQS under a process called State Implementation Plans (SIPs), which are approved by EPA. Generally, the SIPs are composed of air quality rules that are applicable to stationary sources that may emit criteria or hazardous air pollutants. In California, the California Air Resources Board (CARB) was created by the Mulford-Carrell Air Resources Act in 1968. CARB's primary responsibilities include: (1) to develop, adopt, implement, and enforce the State's motor vehicle pollution control program; (2) to administer and coordinate the State's air pollution research program; (3) to adopt and update the State's ambient air quality standards; (4) to review the operations of the local APCDs; and (5) to review and coordinate the SIPs for achieving Federal ambient air quality standards.

California adopted statewide ambient air quality standards for ozone, CO, NO_2, SO_2, sulfates, PM_{10}, airborne lead, hydrogen sulfide, and visibility-reducing particles. State

standards for the criteria pollutants are more stringent than the Federal standards in order to protect the most sensitive members of the populations. California's ambient air quality standards are also included in Table 4.7-1.

Attainment of Federal and State Ambient Air Quality Standards

The original statutory deadline for attainment of the NAAQS would not be met and was extended. The CAA, as amended in 1990, assigned new attainment deadlines of between 2 and 20 years from 1990, and categorized nonattainment as marginal, moderate, serious, severe, or extreme—depending on the degree of violation of the NAAQS.

The CARB designates those portions of the State where Federal or State Ambient Air Quality Standards are not met as "nonattainment areas." The MDAB is designated as nonattainment for PM_{10} by State standards and NAAQS (CARB 2002). The air basin is designated as nonattainment-transitional (meaning the area is close to attaining the standard) for CO for State air quality standards and unclassified for CO for Federal air quality standards. For O_3, the entire basin is designated nonattainment by State standards, and part of the basin is designated nonattainment by Federal standards.

The background air quality trend for PM_{10} in the MDAB since 1993 shows that there has been an overall slight decrease in the number of annual exceedances of State and Federal standards (EPA 2002). The 3-year average concentration of PM_{10} for this 10-year period has dropped from 42 ug/m^3 to 32 ug/m^3. For O_3, there has been a stronger decreasing trend in the number of annual exceedances of State standards. For example, the State O_3 standard was exceeded 89 days in 1997 and dropped to 51 days in 2001. The Federal 1-hour standard was exceeded 17 days in 1997 and only 3 days in 2001. From 1993 to the present, the 8-hour average O_3 concentration has dropped from approximately 0.139 ppm to 0.100 ppm.

Air quality in Arizona is regulated by the Arizona Department of Environmental Quality. No Project activities would require their review.

Local

That portion of the MDAB in the Project area is regulated locally by both the MDAQMD and the KCAPCD. These districts work to achieve Federal and State air quality standards, as well as address local concerns and issues.

In 1995, the MDAQMD submitted a Federal Particulate Matter (PM_{10}) Attainment Plan (Plan) due to several violations of the Federal standard from 1989 to 1991, which resulted in a redesignation of the MDAQMD to moderate nonattainment status. The Plan demonstrates how attainment of the Federal PM_{10} standard would be achieved by the earliest practicable date. The Plan outlines selected control measures that would be imposed to limit the amount of PM_{10} released into the atmosphere. Part of this plan requires Dust Control Plans for construction projects disturbing 100 or more acres.

This and other local rules of the MDAQMD and KCAPCD for fugitive emissions and fossil fuel combustion sources are described below (MDAQMD 2002, KCAPCD 2002).

MDAQMD Rule 401/Kern County Rule 401: Visible Emissions

These rules prevent visible emissions by limiting discharge into the atmosphere of any air contaminant that has an opacity greater than a designated amount for a period or periods aggregating more than 3 minutes in any 1 hour.

MDAQMD Rule 402/Kern County Rule 419: Nuisance

These rules limit the discharge of air contaminants or other material that cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public.

MDAQMD Rule 403/Kern County Rule 402: Fugitive Dust

These rules prevent fugitive dust emissions from any construction activity so that the presence of such dust remains visible in the atmosphere beyond the property line of the emission source. Precautions should be taken to minimize fugitive dust emissions from the construction activity. A Dust Control Plan for construction projects disturbing 100 or more acres is required by the MDAQMD Federal PM_{10} Plan.

MDAQMD Rule 404/Kern County Rule 404.1: Particulate Matter Concentration

These rules limit the amount of particulate matter discharged from any source in excess of listed concentrations.

MDAQMD Rule 405/Kern County Rule 405: Solid Particulate Matter Weight

These rules are similar to Rule 404 and 404.1, except the particulate matter limits are listed as weights instead of concentrations.

MDAQMD Rule 407: Liquid and Gaseous Air Contaminants

This rule prevents emissions of CO exceeding 2,000 ppm measured on a dry basis, averaged over a minimum of 15 consecutive minutes. This rule applies to construction equipment used for the Project.

MDAQMD Rule 409/Kern County Rule 409: Combustion Contaminants

These rules limit CO_2 emissions from the burning of fuel.

MDAQMD Rule 431/Kern County Rule 407: Sulfur Content of Fuels/Sulfur Compounds

These rules limit emissions of sulfur compounds from fuel combustion.

MDAQMD Rule 444/Kern County Rules 416, 417: Open Fires

Rule 444 (C)(5)(e)(ii) states that open burning of brush-clearing debris in compliance with local ordinances to reduce fire hazard is allowed by the MDAQMD with a written permit from the local fire agency. Rule 416 (IV)(G) states that burning of plant life for ROW clearing is allowed with a burn permit.

4.7.3 Significance Criteria

An adverse impact on air quality would be considered significant and would require mitigation if Project construction or operation would:

- conflict with or obstruct implementation of an applicable air quality or attainment plan;

- violate any air quality standard or contribute substantially to an existing or projected air quality violation;

- result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for O_3 precursors);

- expose the public (especially schools, day care centers, hospitals, retirement homes, convalescence facilities, and residences) to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to one in a million and/or a Hazard Index (HI) (non-cancerous risk) greater than or equal to 0.1;

- impair air quality in a mandatory Class I Federal area; or

- create objectionable odors affecting a substantial number of people.

The MDAQMD has outlined its own guidelines for analysis of air quality impacts in CEQA and NEPA documents. These guidelines are the same as the South Coast Air Quality Management District's (SCAQMD) CEQA Air Quality Handbook (SCAQMD 1993), with the exception of the significant emission thresholds. The MDAQMD and AVAQMD Act and Federal Conformity Guidelines (MDAQMD and AVAQMD 2002) reiterate the significance criteria outlined above. In addition, the guidelines specify that, if a Project's total emissions exceed threshold values identified by the District, the Project is considered to have a significant impact on air quality. The significant emission threshold values outlined by MDAQMD are shown in Table 4.7-2. KCAPCD does not specify any emission threshold values for determining significance for non-point source projects.

Table 4.7-2. Significant Emissions Thresholds

Criteria Pollutant	Daily Threshold (pounds)	Annual Threshold (tons)
Carbon monoxide (CO)	548	100
Oxides of nitrogen (NO_x)	137	25
Volatile organic compounds (VOC)	137	25
Oxides of sulfur (SO_x)	137	25
Particulate matter (PM_{10})	82	15

Sources: MDAQMD and AVAQMD 2002.

4.7.4 Impact Analysis and Mitigation

Construction Impacts

Air quality impacts associated with construction projects generally arise from fugitive dust generation and the operation of construction equipment. Fugitive dust results from land clearing, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. The amount of dust generated is a function of construction activities, silt and moisture contents of the soil, wind speed, frequency of precipitation, vehicle traffic and vehicle types, and roadway characteristics. Emissions are greater during drier summer and autumn months and in fine-textured soils. Fugitive dust is a source of airborne particulates, including PM_{10} and $PM_{2.5}$.

Large earth-moving equipment, skip loaders, trucks, and other mobile sources powered by diesel or gasoline are also sources of combustion emissions, including NO_2, CO, volatile organic compounds (VOCs, a precursor of ozone), sulfur dioxide (SO_2), and small amounts of air toxics.

Table 4.7-3 provides a summary of the estimated construction-related emissions for the Project. Specific emissions for all Project construction activities can be found in Appendix F. Emissions presented in Table 4.7-3 are calculated according to the methodology outlined in the SCAQMD CEQA Air Quality Handbook (SCAQMD 1993) and are worst-case estimates of total emissions in the MDAB as a result of the Project. The calculation incorporates the assumption that construction would occur from east to west on the pipeline for approximately 20 weeks. Also assumed is all potential Project construction activities, with the exception of hydrostatic testing, could occur simultaneously on different portions of the pipeline.

Table 4.7-3. Summary of Potential Construction Emissions

Pollutant	Onsite Equipment Emissions	On-Road Vehicle Emissions	Fugitive Dust Emissions	Total	MDAQMD Threshold Values
Daily Emissions					
NO_x (lbs/day)	708.3	0.6	N/A	708.9	137.0
SO_x (lbs/day)	73.4	0.4	N/A	73.8	137.0
CO (lbs/day)	581.9	5.5	N/A	587.4	548.0
PM_{10} (lbs/day)	36.49	0.0	49.2	85.69	82.0
VOC (lbs/day)	70.47	0.1	N/A	70.57	137.0
Annual Emissions					
NO_x (tons/year)	24.26	0.1	N/A	24.36	25.0
SO_x (tons/year)	2.5	0	N/A	2.5	25.0
CO (tons/year)	23.2	0.3	N/A	23.5	100.0
PM_{10} (tons/year)	1.14	0.005	2.84	3.99	15.0
VOC (tons/year)	0.16	0.024	N/A	0.19	25.0

Note:
Calculation methods were taken from SCAQMD 1993, EPA 2000, and CARB 2000. Details can be found in Appendix F.

Construction of the Project is not expected to produce objectionable odors affecting a large number of people. Additionally, impacts on the Class I visibility areas are not expected to be significant because of the short term and low emissions, and no sensitive receptors are located within 1,000 feet of the pipeline. Sensitive receptors would include schools, hospitals, rest homes, long-term care facilities, mental care facilities, residential uses, places of worship, and libraries.

Operational Impacts

The proposed Project does not include construction or operation of compressor station facilities, or other stationary sources of air pollutants. Under normal operating conditions, the proposed underground pipeline would not result in significant air emissions. Typically, only minor emissions of natural gas occur from pipeline connections, termed “fugitive emissions.” Such emissions are typically very small and

therefore unregulated by both permit and source-specific requirements. Operating permits would not be required for the Project. Additionally, the Project would not violate any air quality standards or attainment plans, and would not contribute to an existing air quality violation. Consequently, no air quality impacts would result from operation of the proposed pipeline Project.

Impact AIR-1: Construction Emissions

Construction emissions could temporarily exceed significance thresholds established by the MDAQMD. (Potentially Significant, Class II)

As shown in Table 4.7-3, in a worst-case scenario, Project construction could result in emissions that could exceed the daily significance thresholds established by the MDAQMD for NO_x, CO, and particulate matter. No annual thesholds are exceeded by the Project. Therefore, air emissions from construction equipment would be short-term and limited to the immediate vicinity of the Project area. The values in Table 4.7-3 are unlikely to be reached by the Project, because each construction activity would not occur at the same time. In addition, the total calculated emissions would not occur at a single location, or even a single air basin.

Mitigation for Impact AIR-1:

MM AIR-1a. ***Maintenance of Construction Equipment.*** *The Applicant would maintain construction equipment in accordance with manufacturer's recommendations to prevent unnecessary emissions of NO_x, CO, VOC, and SO_2.*

MM AIR-1b. ***Fuel Use.*** *The Applicant would use lower sulfur #2 diesel fuel in heavy-duty construction equipment, with a sulfur content of 0.5 percent, to minimize SO_2 emissions. The Applicant would burn 87-octane gasoline in other construction equipment, such as light-duty trucks, to minimize emissions of NO_x, CO, and VOC.*

MM AIR-1c. ***Dust Control Plan.*** *30 days prior to construction, the Applicant would obtain CSLC approval of a Dust Control Plan indicating the dust suppression procedures that would be used to minimize emissions and impacts on air quality from construction activities. This plan would include measures concerning application of water, chemicals, or other dust suppressants during*

construction and removal of particulate matter from roadways to prevent re-entrainment.

Rationale for Mitigation. Mitigation measures MM AIR-1a and MM AIR-1b reduce emissions of NO_x, CO, VOC, and SO_2. Emission reduction efficiencies are not provided for NO_x, CO, and VOCs in the available guidance (SCAQMD 1993). In this case, the guidance allows a qualitative assessment of the reduction of emissions if quantification is not available (SCAQMD 1993). Because the emissions are temporary, spread over a wide geographic area including three separate air basins, and less than annual thresholds, the mitigation measures would ensure that the Project does not result in a long-term impact on ambient air quality. Mitigation measure MM AIR-1c reduces emissions of PM_{10}. The SCAQMD emission reduction efficiency for PM_{10} indicates a 30 percent reduction for application of dust suppressants (SCAQMD 1993), which reduces the impact to less than significant.

Table 4.7-4 presents a summary of impacts on air quality and recommended mitigation measures.

Table 4.7-4. Summary of Impacts and Mitigation Measures for Air Quality

Impact	Mitigation Measure
AIR-1: Construction Emissions	**AIR-1a.** Maintenance of Construction Equipment **AIR-1b.** Fuel Use **AIR-1c.** Dust Control Plan

4.7.5 Cumulative Impacts

In addition to the proposed Project, other projects may contribute to cumulative impacts on air quality in the vicinity of the proposed Project. Some of the projects potentially contributing to cumulative impacts on air quality are discussed in Section 5.5, Summary of Cumulative Impacts.

The proposed Project would not add any stationary or permanent sources of NO_x, CO, VOC, $PM_{10,}$ or SO_2 to the environment. All potential impacts on air quality would result from temporary construction activities. Nevertheless, when projects are constructed at

the same time, or are timed closely together, they can result in a cumulative impact on air quality locally and in a region. As discussed in Section 5.5, Summary of Cumulative Impacts, several projects—primarily industrial and housing development projects—are planned in the vicinity of the Project. Because the timing of construction for these projects is unknown, it is possible that portions of these projects could be constructed at the same time and in the same vicinity as the proposed Project. Mitigation measures similar to those outlined in Section 4.7.4, Impact Analysis and Mitigation, for the proposed Project likely would be required for these other projects. Although the potential exists for cumulative impacts related to air quality as a result of the proposed Project, the temporary nature of construction activities and the lack of sensitive receptors near the proposed Project make it unlikely that cumulative impacts would be significant. Additionally, most construction activities are limited in time and distance. Cumulative impacts are therefore less than significant (Class III).

4.7.6 Alternatives

No Project Alternative

The No Project Alternative would not convert the former All American crude oil pipeline system to a natural gas transmission system. This alternative would not affect air quality.

Ehrenberg to Daggett Alternative

The Ehrenberg to Daggett alternative would not convert the portion of Line 1903 from MP 0 to MP 132.1. This alternative would reduce the total air quality emissions related to the Project by approximately half, as a large portion of the proposed Project would not be completed. Construction-related emissions for the Ehrenberg to Daggett Alternative would be the same as described for the Project on a daily basis, however, because the same types and numbers of equipment would be used. These emissions would be temporary. Implementation of mitigation measures and compliance with Federal, State, and local regulations would reduce potential impacts to less-than-significant levels (Class II). Operational impacts on air quality under the Ehrenberg to Daggett Alternative would be the same as described for the proposed Project.

Ehrenberg to Cadiz Alternative

The Ehrenberg to Daggett alternative would not convert the portion of Line 1903 from MP 0 to MP 215.75. This alternative would reduce the total air quality emissions related to the Project by more than half, as a large portion of the proposed Project would not be completed. Total air quality emissions would also be less than those produced with the Ehrenberg to Daggett Alternative as an additional 73.65 miles of Line 1903 would not be converted. Construction-related emissions for the Ehrenberg to Cadiz Alternative would be the same as described for the Project on a daily basis, however, because the same types and numbers of equipment would be used. These emissions would be temporary. Implementation of mitigation measures and compliance with Federal, State, and local regulations would reduce potential impacts to less-than-significant levels (Class II). Operational impacts on air quality under the Ehrenberg to Cadiz Alternative would be the same as described for the proposed Project.

4.7.7 References

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